

2 DISCUSSION OF ALTERNATIVES

In order to evaluate the potential demand for improved transportation services in the corridor, a range of alternatives were considered. These alternatives were developed with service concepts that consider different modes, routes, vehicle technology, improvements within existing right-of-way and construction of new right-of-way. The purpose for developing these diverse service concepts was to assess the attractiveness of an alternative as measured by expected ridership.

The modes under consideration for travel between Bangor and Bar Harbor are:

- Alternative 1: Rail/Bus
- Alternative 2: Bus
- Alternative 3: Busway Bypass
- Alternative 4: Light Rail A (modified right-of-way between Brewer and Ellsworth)
- Alternative 5: Light Rail B (street running right-of-way between Bangor and Brewer)
- Alternative 6: Ferry

All of the alternatives begin at Bangor International Airport (BGR) and end in Bar Harbor. At BGR, connecting bus service would be used to transport passengers from the airport terminal to the BGR Intermodal Facility where rail service begins for Alternatives 4 and 5. For Alternatives 1, 2 and 3, the same bus that picks up passengers at the airport terminal would first stop at the intermodal facility and then would continue on the prescribed route to Bar Harbor. Alternatives 1-5 include intermediate stops at the Bangor Waterfront, Brewer, Ellsworth, and the Hancock County-Bar Harbor Airport (BHB) Intermodal Facility. For Alternative 6, a connecting bus would be used to transport passengers from the airport terminal and the BGR Intermodal Facility to a ferry terminal in Bangor.

Connections to existing transportation services would be available at the proposed BGR Intermodal Facility to intercity and local bus service, at the proposed BHB Intermodal Facility to the Island Explorer bus, and at Bar Harbor with connections to the Island Explorer bus and Bay Ferries service to Nova Scotia. In addition, a connection to a new, proposed ferry service to Bar Harbor would be available at the proposed BHB Intermodal Facility. An intermodal facility is a station served by more than one mode of transportation (i.e. rail, bus, taxicabs, ferry) and allows passengers to transfer between these modes.

For all of the rail alternatives and the busway alternative, it was assumed that the Calais Branch between Brewer and Ellsworth would be used for transit service. The City of Bangor owns a piece of rail right-of-way that borders BGR and connects with the GTI right-of-way at the Bangor Waterfront. It was assumed that rail service in Alternative 4 would use the GTI right-of-way between the Bangor Waterfront and the start of the Calais Branch in Brewer.

Several studies have been conducted to evaluate the feasibility for operating freight service on the Calais Branch. Impacts to existing or potential freight services were considered in the development of the alternatives. If the Calais Branch were converted into a busway, then it would be impossible to operate freight service since the busway would contain paved roadways. A potential impact to existing freight service may occur under Alternative 4/Light Rail A. Under this alternative, it is assumed that new track would be constructed in GTI right-of-way (GTI is an

active freight railroad). Potential impacts may include temporary construction impacts to GTI operations as well as institutional issues. These potential impacts are discussed further in the Alternative 4 fact sheet found in Appendix 2.

The ferry alternative (Alternative 6) would use local waterways and serve only Bangor and Bar Harbor.

The operating season for these alternatives was assumed to be from June 1st to October 15th. The operating season is designed to coincide with the peak summer and fall tourist season to potentially attract the greatest number of travelers to these services. For those alternatives that require transfers between modes, it was assumed that these would be timed transfers, meaning bus and rail vehicles are scheduled to meet at a specified time to reduce waiting time. Further, under these alternatives it was assumed that transfers between modes were free. Across all alternatives it was assumed that the fare would be five dollars (\$5) for an end-to-end trip and these services would provide six round trips.

Operating plans were created for each alternative in order to estimate travel time. Travel time is one parameter that heavily influences ridership. Other important parameters include cost, frequency, and directness (number of transfers required).

The following tables summarize the routes associated with Alternatives 1-6 and compare key operating characteristics by alternative (see Tables 1 and 2).

Table 1: Alternative Routes

Segment	Alternative 1 Rail/Bus	Alternative 2 Bus	Alternative 3 Busway Bypass	Alternative 4 Light Rail A	Alternative 5 Light Rail B	Alternative 6 Ferry
Bangor-Brewer	I-95/I-395 (Bus)	I-95/I-395	I-95/I-395	New track on GTI * ROW	New track via street	Penobscot River
Brewer-Ellsworth	Calais Branch (Rail)	Route 1A	Busway constructed on Calais Branch	Calais Branch (different track than Alt 1)	Calais Branch (same as Alt 1)	Eggemoggin Reach
Ellsworth-Trenton	Route 3 (Bus)	Route 3	Busway constructed in New ROW	New track same as Alt 5	New track same as Alt 4	Blue Hill Bay
Trenton-Bar Harbor	Route 3 (Bus)	Route 3	Route 3	Route 3	Route 3	Mount Desert Island

*GTI: Guilford Transportation Industries, the parent company of the Maine Central Railroad

Table 2: Key Operating Characteristics by Alternative

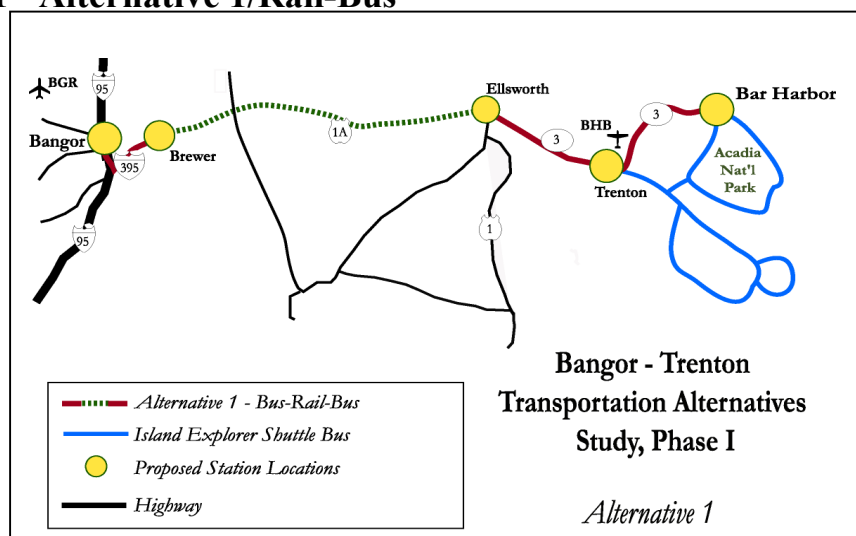
Alt.	Mode	Vehicle Type	Corridor Length (miles)	Number of Stops per Trip	Number of Transfers per Trip*	Average Operating Speed (MPH)	One-Way Trip Time (minutes)
1	Rail/Bus	Commuter Rail Rolling Stock and Motorcoach Bus	51.8	6	2	45 (rail)/ 42 (bus)	89
2	Bus	Motorcoach Bus	49.4	6	0	45	80
3	Bus	Motorcoach Bus	52.2	6	0	45 (hwy) 65 (busway)	65
4	Light Rail	Diesel Multiple Unit	51.4	6	2	45 (bus)/ 50 (LRT)	74
5	Light Rail	Diesel Multiple Unit	51.8	6	2	45 (bus)/ 40 (LRT)	86
6	Ferry	Catamaran	83.0	2	1	30 knots	144

*Transfer from BGR Terminal to BGR Intermodal Facility not included because it is common to all alternatives

The assumptions and the methodology used to derive operating information are described in Appendix 1.

Fact sheets were developed for each of the alternatives and appear in Appendix 2. These fact sheets provide a brief description of key operating characteristics and issues associated with each alternative.

2.1 Alternative 1/Rail-Bus



Under this alternative, rail service would be provided between two proposed stations, Brewer and Ellsworth. Buses would be used to serve the remaining proposed stations: BGR Intermodal Facility, Bangor Waterfront, BHB Intermodal Facility and Bar Harbor.

The bus would pick up passengers at the airport terminal and at BGR Intermodal Facility, then travel east on Hammond Street and use local roadways to serve a proposed Bangor Waterfront station. The bus would then follow Route 1A southbound to Brewer, stopping at the proposed Brewer station located just south of the junction of I-395/Route 1A. At this station, passengers would transfer to rail service to Ellsworth.

The rail segment of Alternative 1 would serve the two proposed stations of Brewer and Ellsworth. Rolling stock would be commuter rail-type diesel locomotive and coaches similar to the type of equipment used to provide long distance regional rail service. An example of commuter rail equipment is shown in the picture on the right. This type of equipment is generally designed for heavier passenger volumes and is more comfortable for riders than equipment used to provide shorter-distance transit services. The Calais Branch would be utilized to operate train service. At Ellsworth station, passengers would transfer to bus service to Bar Harbor.

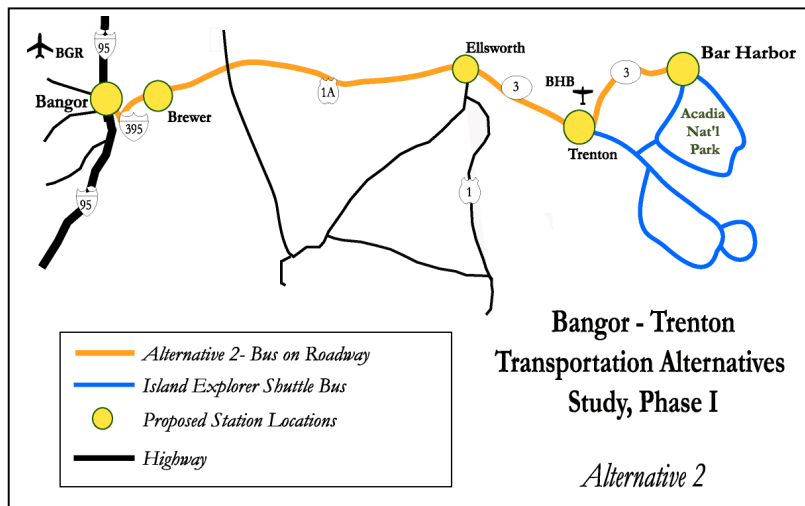


Bus service would be provided from Ellsworth to Bar Harbor using motorcoach buses (see Alternative 2 for a description of this type of equipment; the picture below shows an example of a typical motorcoach bus). After departing Ellsworth, the bus would travel southbound on Route 3, stop at the BHB Intermodal Facility, and then continue over Thompson Island to Mount Desert Island. It would follow Route 3 along the north side of Mount Desert Island to terminate at Main Street ("the Green") in Bar Harbor.



The trip from Bangor to Bar Harbor would cover 51.8 miles and take 89 minutes. The average operating speed for the rail component of this alternative is 42 MPH and 45 MPH for the bus component.

2.2 Alternative 2/Bus



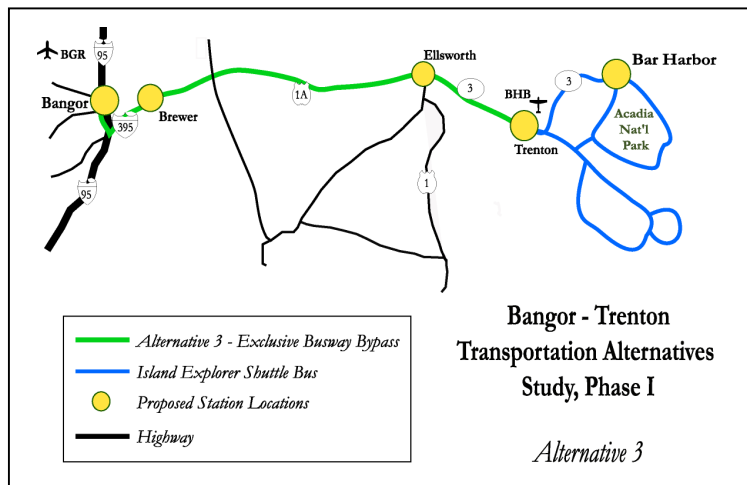
Under Alternative 2 a bus line would serve six proposed bus stations between Bangor and Bar Harbor, operating in mixed traffic on existing roadways within Interstate 395/Route 1A/Route 3 corridor. The bus would pick up passengers at the airport terminal and at the BGR Intermodal Facility, then travel east on Hammond Street and use local roadways to serve a proposed Bangor Waterfront station. The bus would then follow Route 1A southbound to Brewer, stopping at the proposed Brewer station located just south of the junction of I-395/Route 1A. Bus service would continue southbound on Route 1A to the Ellsworth station located near the intersection of Main Street. Next, the bus would travel southbound on Route 3 stopping at the proposed BHB Intermodal Facility. After departing the BHB Intermodal Facility, the bus would travel southbound on Route 3, over Thompson Island, and access Mount Desert Island. It would follow Route 3 along the north side of Mount Desert Island to terminate at Main Street ("the Green") in Bar Harbor.

In order to make the bus alternatives attractive to potential riders this service assumed the use of motor coach buses. Motor coach buses are over-the-road buses with luggage storage and are more plush than transit buses. (A typical motorcoach bus is shown in the picture on the right). Bicycle racks can be fitted onto these buses for added convenience to potential riders. These coaches generally have a seating capacity of 40 passengers and are most often associated with inter-city bus services. It is assumed that conventional diesel bus equipment will be used to operate the service. However, alternate fuel technology such as Compressed Natural Gas (CNG) or propane propulsion systems could be used, if preferred.



The trip from Bangor to Bar Harbor would cover 50 miles and take 80 minutes. The average operating speed for this alternative is 45 MPH.

2.3 Alternative 3/Busway Bypass



With Alternative 3, a bus line would operate in a manner similar to Alternative 2. However, between Brewer and Ellsworth, a bus roadway facility (busway) would be constructed in the existing rail right-of-way and in a new right-of-way between Ellsworth and Trenton. These rights-of-way would be used exclusively for bus service.

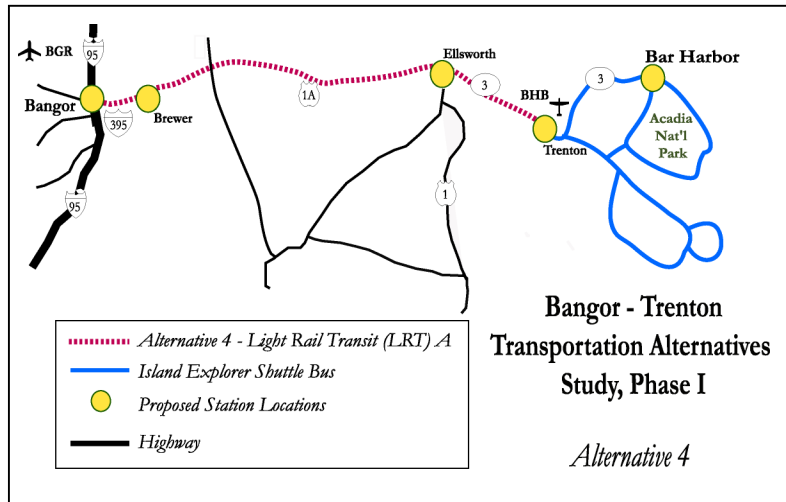
Under Alternative 3, the bus would pick up passengers at the airport terminal and at the BGR Intermodal Facility, then travel east on Hammond Street and use local roadways to serve a proposed Bangor Waterfront station. The bus would then follow Route 1A southbound to Brewer, stopping at the proposed Brewer station located just south of the junction of I-395/Route 1A. After stopping in Brewer, the bus would access the Calais Branch and travel southbound on the proposed busway (an example of a typical busway is shown in the picture on the right). Buses would stop at the Ellsworth station, then continue on the busway using the new right-of-way and continue to travel south. The bus would exit the busway to serve the proposed BHB Intermodal Facility. Upon departing the BHB Intermodal Facility, the bus would travel southbound on Route 3 over Thompson Island, and access Mount Desert Island. It would follow Route 3 along the north side of Mount Desert Island to intersection of Main Street in Bar Harbor where the service terminates. Connections to existing and proposed transportation services would be the same as in Alternative 2.



As in Alternative 2, it was assumed that motorcoach buses would be used for this service.

The trip from Bangor to Bar Harbor would cover 52 miles and take 65 minutes. The exclusive busway enables the bus to bypass traffic and achieve higher speeds than the “mixed traffic” bus of Alternative 2. The total corridor length is 52 miles. The average operating speed for this alternative is 45 MPH on Highway and 65 MPH on Busway.

2.4 Alternative 4/Light Rail A



Alternative 4 would provide train service from BGR Intermodal Facility to BHB Intermodal Facility, with stops at three proposed intermediate stations: Bangor Waterfront, Brewer, and Ellsworth. This alternative assumes use of the GTI right-of-way (an active rail right-of-way) between the proposed BGR Intermodal Facility, the proposed Bangor Waterfront station and the proposed Brewer Station. Between Brewer and Ellsworth this alternative uses the Calais Branch. This alternative assumes that curves within that existing right-of-way can be straightened to allow higher maximum speeds¹. Between Ellsworth and Trenton the rail service would continue on new rail right-of-way before terminating at the proposed BHB Intermodal Facility. The rail rolling stock would be Diesel Multiple Units (DMUs). These are independently propelled light rail vehicles that do not use locomotives or overhead wire for propulsion. An example of a typical light rail vehicle is shown in the picture above.

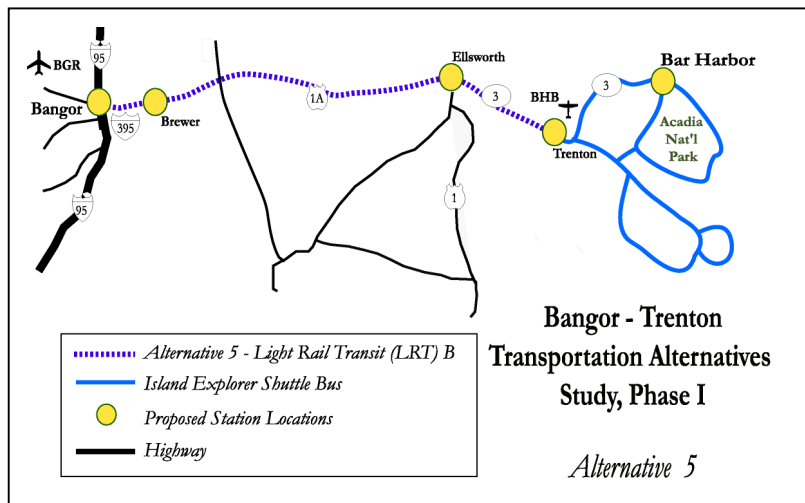


Bus service would be provided from BHB Intermodal Facility to Bar Harbor. After departing the BHB Intermodal Facility, the bus would travel southbound on Route 3, over Thompson Island, entering Acadia National Park. It would follow Route 3 along the north side of Mount Desert Island to terminate at Main Street ("the Green") in Bar Harbor. As with Alternative 1, transfer times between modes are assumed between the BGR terminal and the BGR Intermodal Facility as well as in the BHB Intermodal Facility.

The trip from Bangor to Bar Harbor would cover 58 miles and take 74 minutes. The average operating speed for the rail component of this alternative is 50 MPH and 45 MPH for the bus component.

¹ The feasibility of straightening curves would need to be determined in a subsequent study phase.

2.5 Alternative 5/Light Rail B

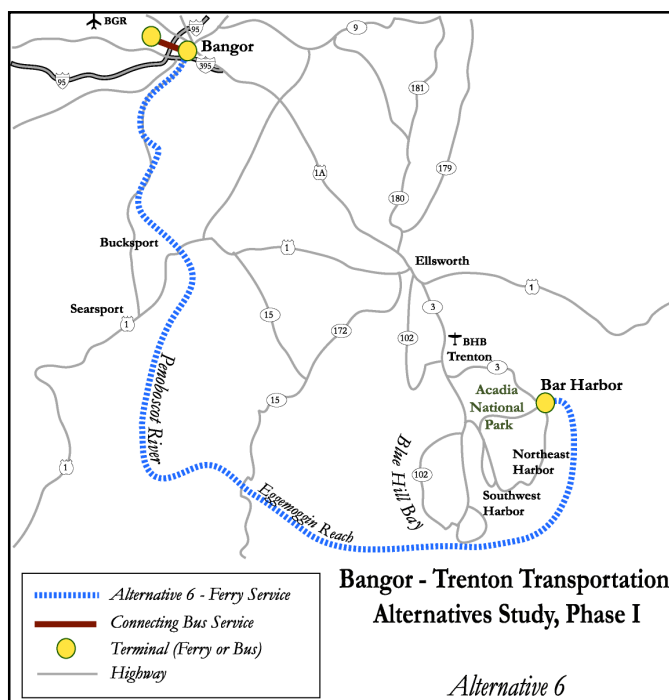


Alternative 5 would provide train service from BGR Intermodal Facility to BHB Intermodal Facility, with three proposed intermediate stations: Bangor Waterfront, Brewer, and Ellsworth. Rolling stock would be light rail, Diesel Multiple Units (DMUs). This alternative proposes construction of new track within the street right-of-way between the BGR Intermodal Facility and Brewer. The routing in this segment includes Hammond Street to Union Street, across the Wilson Bridge to Wilson Street. On Wilson Street, a connection to GTI right-of-way would be made, and the train would travel to Brewer. The segment of the route that operates within the street right-of-way would be developed in conjunction with the City of Bangor and designed to use major roadways that could potentially accommodate street-running light rail service. From Brewer station to Ellsworth the Calais Branch would be used to provide the continuation of rail service. In contrast to Alternative 4, the alignment is not modified to maximize operating speed. Between Ellsworth and Trenton, the rail service would continue on new rail right-of-way before terminating at the proposed BHB Intermodal Facility. Bus service would be provided from Trenton to Bar Harbor using the route previously described in Alternative 4.

Similar to Alternative 4, light rail DMU vehicles were assumed for this alternative.

The trip from Bangor to Bar Harbor would cover 51.4 miles and take 86 minutes. The average operating speed for the rail component of this alternative is 40 MPH and 45 MPH for the bus component.

2.6 Alternative 6/Ferry



This alternative proposes operating passenger ferry service between Bangor and Bar Harbor. A connecting bus service would be used to transport passengers from the airport terminal and the Bangor International Airport Intermodal Facility to a ferry terminal in Bangor. The ferry route would make use of local waterways for travel between Bangor and Bar Harbor. The ferry route originates in Bar Harbor and travels south on the Penobscot River to its end, into Eggemoggin Reach. In Eggemoggin Reach, the ferry would travel east around the Brooklin Peninsula into Blue Hill Bay. Once in Blue Hill Bay, the ferry would travel counter-clockwise, past the Cranberry Isles and around Mount Desert Island to terminate in Bar Harbor.

The trip from Bangor to Bar Harbor would cover 83 miles and take 2 hours and 24 minutes. The average operating speed for this alternative is 30 knots.

To make ferry service an attractive and competitive mode for potential riders, the selection of a ferry vessel considered several factors including the length of the route and vessel operating speed. Catamaran vessels with an operating speed of 30 knots and a passenger capacity of 250 (all-weather seats) were chosen as the most appropriate vessel for this proposed service. (An example of a typical catamaran is shown in the picture on the right.) Catamaran vessels are already in use for the Bay Ferries service from Bar Harbor to Nova Scotia, so this type of technology is not unfamiliar in the region. The ferry vessel for Alternative 6 would not allow for automobile passage.

